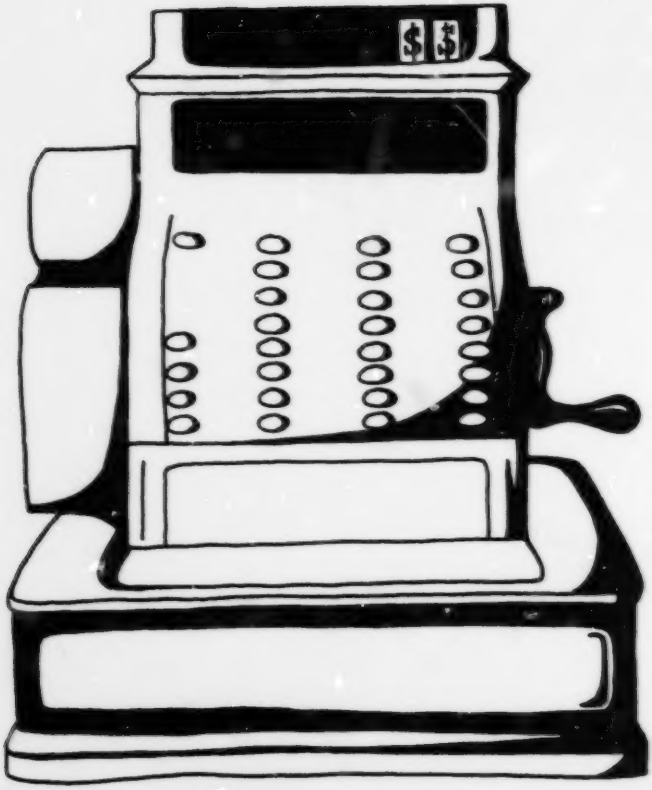
How a manufacturer can profit from facts



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Do you want to

- estimate the size of the *market* for your product and calculate your share?
- learn more about your *competition*, both domestic and foreign?
- find out more about your *customers* — where they live, what they buy, how much money they have to spend, what sort of houses they live in?
- compare your *costs* with those of similar firms?
- keep track of *trends in employment*, wages and hours of work in your industry or your area?
- monitor *price changes* at the industrial, wholesale and consumer level?
- use an *escalation clause* in a contract?

if you do, but you don't know how to, this booklet can help you.

How a manufacturer can profit from facts

An introduction to the use of statistics
prepared by the User Advisory Services Division
of Statistics Canada for the
owners and managers of the
thousands of small manufacturing
businesses in Canada.

Introduction

To many owners and managers of businesses, Statistics Canada is a government agency which asks a lot of questions that take time and money to answer. What is less widely known is that, as a result of asking those questions, Statistics Canada has a lot of answers — answers which can help business people in small and large companies operate more efficiently and effectively.

Large companies, with resident economic and research staffs, are aware of the kinds of information published by Statistics Canada and how it can be used. This booklet is designed to illustrate how this wealth of information can help the managers of small companies who are not familiar with what is available and have little or no training in the use of statistics.

Some years ago, the then Dominion Bureau of Statistics produced a booklet illustrating how an owner-operator of a small business could take advantage of Canada's official statistics. Its popularity has prompted Statistics Canada to plan a series of booklets, each one aimed at a different sector of business. This one, for manufacturing industry, is the first in the series.

In this booklet, case studies are used to illustrate the type of information available from Statistics Canada and some of the ways it can be used. Although the cases are fictitious, they are all typical of the way Statistics Canada information is used by companies. The fact that a particular industry or type of problem is not discussed here does not mean the information is not available. It probably is. A section is included on where to begin a search for data and, for easy reference, a list of the regional offices of Statistics Canada is given at the back of the book on page 43.

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What use are statistics?

The manager of a small enterprise wears many hats. At one and the same time he or she has to be an expert in finance, production, marketing, purchasing, labour relations, and so on. Each day decisions have to be made, some of which affect the day to day operation of the business while others relate to the longer term.

How does one go about reaching a good decision? Obviously the process will vary depending on the person and the type of decision. However, it is generally true to say that the more factual information the decision maker has, the better the chances of arriving at a good decision.

The information may take many forms — it may be internal information from company records, or it may be external information on the value of production of an industry, the number employed, the size and location of a market, etc. This is where Statistics Canada can help.

Statistics Canada publishes information on a wide range of subjects. There are individual reports on industries, information on prices, wages, agriculture, transport, communication, construction, imports and exports, government finance, public health and hospitals, education, family expenditure, population, housing, retail trade, the judicial system and much more.

With this information it is possible to compare a company's performance with others in the industry or to find out if the market for a product is expanding or contracting. Market size and share, seasonal patterns, price changes, wage costs, operating ratios, business prospects — these are the things which concern business people and they can all be calculated from Statistics Canada data.

Statistics Canada information is mainly derived from the surveys it carries out. For the protection of respondents the Statistics Act, which governs Statistics Canada's operation, does not permit information to be published in any way that would identify a single company or person. Subject to this basic restriction, however, Statistics Canada's policy is to make as much useful information available to as many people as possible, and at minimal cost.

Published statistics are rarely the complete answer to a problem and anyone using statistics should also make use of the many other sources of information available to business people. Nevertheless, Statistics Canada is probably the most important single source of information external to the company and the following case studies illustrate how some of the information it publishes can be used and the type of question it can answer or help to answer.

The case studies are also designed to show that making use of statistics does not necessarily require any formal training or help from outsiders. The information is readily available, and most of it is easily understandable. The ability to do ordinary arithmetic and to think in an orderly fashion are often the only skills required.

Case Study 1.

Case Study 1. Locating a New Business

Since emigrating to Canada in 1971, Angelo Bonelli had worked as a baker for a large bakery firm in Vancouver. He now wanted to go into business for himself, and he decided to open a bakery specializing in Italian bakery products. One of his problems was to select the best possible location for the business. He would be selling his products on the premises and he had to be sure he was near a potentially large enough market. Of course, he hoped to sell to as many people as possible, but thought he stood a better chance of success if he located in an area with a large Italian-Canadian population. He therefore wanted to find out how many people of Italian descent lived in Vancouver and in which neighbourhoods they were concentrated.

On the advice of the librarian in the public library near his home, Mr. Bonelli contacted User Advisory Services at Statistics Canada's office in Vancouver. There he was given the following information on the population of Vancouver and the surrounding areas from the 1971 Census:

Geographical Division	Ethnic Italian Population	Total Population All ethnic Groups
Vancouver (city)	19,020	426,270
North Vancouver (city)	1,175	31,855
North Vancouver (municipality)	965	57,940
West Vancouver (municipality)	395	36,465
Richmond (municipality)	530	62,110
Delta (municipality)	420	45,775
Surrey (municipality)	900	98,565
New Westminister (city)	860	42,895
Burnaby (municipality)	3,990	125,660
Coquitlam (municipality)	760	53,130
All Others	1,030	101,685
Vancouver Census Metropolitan Area	30,045	1,082,350

Source: Vancouver Census Tract Series A, Cat. No. 95-728

Mr. Bonelli was pleased to learn that over 19,000 Italian-Canadians lived in the City of Vancouver in 1971 and suspected the number has grown since then. He was sure that the Italian community was concentrated in specific areas and asked if Statistics Canada had information on individual parts of the city. He was given two publications, called *Census Tract Bulletins A and B* for Vancouver.

The staff at Statistics Canada explained that Census Tracts are small areas within major urban centres which follow easily recognized boundaries, contain between 2,500 and 8,000 people and are fairly homogeneous in terms of economic and social factors.

From the Census Tract publications, Mr. Bonelli extracted the following information:

Population by Ethnic Group — Italian
Selected Census tracts within the City of Vancouver
1971 Census

Geographical Area	(No. of Persons)
Vancouver Census Metropolitan Area	30,045
Vancouver City	19,020
Census Tract 50	710
51	1,420
52	1,350
53	1,565
54	2,255
55	1,050
56	860
57	320
Total: Census Tract 50-57	9,530

Source: Vancouver Census Tract, Series B, Cat. No. 95-758

The map in the publication showed that these eight Census Tracts were all in the same part of the city. Their population included about half of all Italian-Canadians in the city of Vancouver and about a third of the total in the whole metro area. In addition there were substantial numbers of Italian-Canadians in the surrounding neighbourhoods.

The Census Tract Bulletins provided a wide range of other information on this area, including the number of familes and the average family income in each census tract.

Geographical area	Number of Families	Average Family Income
Vancouver Census Metropolitan Area	267,115	$10,664
Vancouver City	101,650	$10,422
Census Tract 50	2,225	$ 7,163
51	1,715	8,839
52	2,360	8,360
53	2,160	9,075
54	2,145	8,123
55	2,220	7,423
56	1,820	6,733
57	1,670	5,101
Total 50-57	16,315	

Source: Vancouver Census Tract, Series A, Cat. No. 95-728, Series B, Cat. No. 95-758

Although average family income within these tracts was below the average for the City and metro area generally, Mr. Bonelli suspected that income levels among Italian-Canadians was not very important when it came to buying bakery products. He reasoned that two or three bakery items were staple commodities to most Italian families, regardless of their income.

He now needed information on how much families spend on bakery goods and was given a report entitled *Urban Family Food Expenditure, 1974*. From this, he discovered a large number of facts about expenditure patterns by families of different sizes and with different incomes. He noticed that expenditure on bakery products increased as family size increased, which was important because the average number of persons per family was generally higher in Census tracts 50 through 57 than it was for the City of Vancouver as a whole.

Using the Census Tract publication and the 1974 Urban Family Food Expenditure Survey, Mr. Bonelli estimated the potential sales revenue from the area as follows:

a) Average family income in Census Tracts 50-57 in 1971 was $7,668.[1]

b) Average weekly family food expenditure on bakery products in 1974 by families with incomes of $7,000-$7,999, was $2.49.

c) Estimated annual family expenditure on bakery products in 1974 was: 52 weeks x $2.49 = $129.48.

d) Assuming the number of families had not changed since 1971, estimated total expenditure on bakery products for census tracts 50-57 in 1974 was: 16,315 families x $129.48 = $2,112,446.20

Mr. Bonelli wanted to update this estimate and User Advisory Services explained that the Consumer Price Index for Vancouver could be used to obtain a rough estimate of current expenditure levels. Using the index for Cereal and Bakery Products, he found that prices had increased 17.8% between 1974 and 1975. This brought his market estimate up to almost $2.5 million. Mr. Bonelli felt this was a conservative estimate of the potential market as the number of families in the area had probably increased since 1971 while the actual amount of bakery products bought by each family had probably not changed despite the recent price increases. In addition he hoped to attract some customers from outside the area.

There were still a number of steps that Mr. Bonelli would have to take in the process of deciding where to locate his business and User Advisory Services had some suggestions as to sources for the other types of information he required. For example, the municipal business licensing and inspection departments could provide information on the number of bakeries in the area; a number of federal and provincial government departments give advice on opening a new business and the industry association could be consulted for further information. Of course, there was also the problem of actually finding a suitable building to rent or buy in whatever area he chose.

[1] The average family income for the area is calculated by multiplying the number of families by the average family income in each tract. This gives the total income in each tract. The total income for the eight tracts is then added together and divided by the number of families in the eight tracts.

Case Study 2.

Case Study 2. Introducing A New Product Line

Severn Metals Limited, a well established metal fabricating company in Toronto, was mainly involved in metal stamping, pressing and coating for the automotive industry. The firm was enjoying a rising volume of business and good profits but the owner, Dick Leach, felt that it would be more secure if it diversified. As their present equipment and know-how could be used to produce metal office furniture, Mr. Leach thought this was a product line worth considering. However, he wanted to find out more about the present production of office furniture and trends in the industry. He wrote to Statistics Canada in Ottawa, explained his problem and asked for any information they had which would be of use to him. Statistics Canada sent him several publications and suggested he contact their Toronto office for further assistance.

The first publication Mr. Leach looked at was *Office Furniture Manufacturers* which was one of the reports resulting from the Census of Manufactures. This report gave details of the number of firms in each province classified[1] to the office furniture industry, the number of employees, hours worked, wages paid, material and supply costs and so on. The same information for the industry in Canada as a whole was given by size of company based on numbers employed. Some of the information was for the latest two years only but the principal statistics went back to 1961.

Mr. Leach found this information on the firms primarily producing office furniture very interesting. However, he realized that some firms which were classified to other industries may make furniture as a side line and he was more interested in the total production of office furniture. He was pleased to find that *Office Furniture Manufacturers* included two tables on the shipments of office furniture. The first table gave the value of shipments of firms classified to the office furniture industry but the second showed exactly what he wanted — total Canadian production of metal office furniture including shipments by all firms which made office furniture, regardless of their industrial classification. Here is what this second table showed:

[1]An explanation of the classification of firms to industries is given on page 39

Shipments of Selected Goods of Own Manufacture
All Industries, 1973 and 1974

(Includes shipments of establishments classified to other industries which manufacture, as a secondary activity, the commodities listed)

	1973		1974	
Description	Quantity	Value $'000	Quantity	Value $'000
Wooden				
Office desks	193,515	27,835	211,419	34,764
Office chairs upholstered or not	336,431	12,854	191,918	9,189
Other wooden office furniture or equipment	.....	8,392	.....	8,297
Total	.....	49,081	.....	52,250
Metal				
Office desks	126,031	19,992	157,819	26,013
Office chairs upholstered or not	514,843	27,515	611,380	34,807
Visible record equipment	.....	26,979	.....	37,095
Other metal office furniture or equipment	.....	7,322	.....	7,209
Total	.....	81,808	.....	105,324

Note ... not appropriate
Source: Office Furniture Manufacturers, Cat. No. 35-212

This table enabled Mr. Leach to compare the production of wooden and metal furniture but he needed information for more than two years so he contacted the Statistics Canada regional office and arranged for it to be mailed to him. With the information on exports and imports received from Ottawa, he then compiled the following table:

Office Furniture Shipments — All Industries

	Wooden Office Furniture				Metal Office Furniture				Imports Office Furniture	Exports Office Furniture
	Desks		Chairs		Desks		Chairs			
Year	No. '000	Value $m	No. '000	Value $m	No. '000	Value $m	No. '000	Value $m	Value $m	Value $m
1966	114.9	13.2	230.8	6.2	79.2	13.0	227.4	10.5	4.4	2.1
1967	124.1	14.6	238.6	6.5	78.6	12.5	273.8	11.9	5.2	2.5
1968	141.5	16.0	189.2	6.0	79.1	11.8	252.6	12.1	4.4	4.2
1969	157.6	18.1	230.9	7.2	97.5	14.8	281.6	14.0	5.5	8.4
1970	163.3	19.1	243.9	7.6	93.5	14.1	336.8	13.7	5.5	10.4
1971	158.2	18.9	203.2	7.1	95.5	15.5	363.6	17.5	4.9	9.5
1972	159.7	21.9	255.9	9.5	116.0	17.4	448.3	21.2	5.9	11.4
1973	193.5	27.8	336.4	12.9	126.0	20.0	514.8	27.5	7.8	18.3
1974	211.4	34.8	191.9	9.2	158.4	26.0	611.4	35.0	12.0	18.1

Source: Office Furniture Manufacturers. Cat. No. 35-212
Imports by Commodities. Cat. No. 65-007
Exports by Commodities. Cat. No. 65-004

As the information was not completely up to date, Mr. Leach turned his attention to another publication he had received from Ottawa — *Quarterly Shipments of Office Furniture Products*. This showed value of shipments by product to each province. From the notes he realised the coverage of this publication was different from the annual survey so the figures would not be exactly comparable, but the trends would still show up. From the quarterly publication, Mr. Leach determined that between 1974 and 1975 the value of shipments of wooden desks and chairs increased by less than 1%, while the value of shipments of metal desks and chairs increased over 6%. In fact, the value of production of metal office desks by the firms in the survey[1] declined between 1974 and 1975 while the value of metal office chairs produced increased nearly 18%.

Looking at imports and exports, Mr. Leach discovered imports had continued to increase to over $12 million in 1975 while exports, which had peaked in 1973, decreased further to about $14 million in 1975.

Mr. Leach read the explanatory notes in the publication and visited the User Advisory Services office to discuss the material he had gathered together and get some more information. He then felt reasonably confident in drawing some conclusions about the metal office furniture industry.

a) Production of both wooden and metal office furniture had increased substantially since 1966. In terms of physical output, an approximately equal number of metal and wooden chairs had been produced in 1966 yet the number of metal chairs had grown much faster since then. In fact, production of wooden chairs declined in 1974 and, in that year, production of metal office chairs was more than three times the production of wooden office chairs. The production of wooden

[1]The manufacturers co-operating in this survey account for approximately 85% of the total value of shipments of the Office Furniture Industry based on the 1973 annual Census of Manufactures.

office desks, had always exceeded the production of metal office desks, but in 1974 metal desks had made up 43% of total office desk production which was slightly higher than in any of the previous years.

b) The total value of shipments of metal office furniture had always been higher than wooden furniture and the gap had increased still further in the last two years. This had been due to both the decline in production of wooden chairs and a substantial increase in the value of production of metal chairs in both 1973 and 1974. (Mr. Leach realized he would have to look at price increases in the industry to determine the impact they had on the increase in value of production.)

c) Exports and imports had increased significantly since 1966. Exports had recently declined but imports had been increasing steadily since 1971. This might indicate an opportunity for a new firm which could displace some imports in the domestic market.

d) The downturn in the value of production of metal office desks in 1974 would require further investigation, although it had in fact been preceeded by a significant increase in 1973. However, the size of the market for metal office chairs and the substantial increase in both volume and value of production in the past few years indicated that, if Severn Metals were to produce metal office furniture, this would be the product on which to concentrate.

To get a feel for price increases for different office furniture products over the past few years, User Advisory Services referred Mr. Leach to the industrial selling price indexes published each month in *Industry Price Indexes*. Mr. Leach intended to look at these indexes and the quarterly shipments for 1976 when they were available. However, he realised he needed considerably more information before making any decision on a new product line. He would need a long-term market forecast, which might require the services of a marketing consultant. For example, he would need projections of labour and materials costs and an indication of the future needs of large users of office furniture such as governments and large corporations.

Although it had not provided all the answers, the information from Statistics Canada was sufficient to indicate that the matter was worth pursuing and Mr. Leach felt confident enough to initiate a more detailed study.

Case Study 3.

Case Study 3. Considering Plant Expansion

Schooner Cove Ltd., a small woodworking company employing 22 people, had operated in the Halifax area since 1951. Its major products were residential flush-type doors, sashless wooden window units, mouldings, and wooden window and door frames. These were sold primarily to residential building contractors for installation in new houses and apartments.

Tom Barnaby, the firm's owner, was seriously considering expanding and modernizing his production capacity. The company was still working from the original building which, while adequate during the firm's early years, had become too small to accommodate new production machinery and was poorly laid out for efficient production. New machinery would also allow the firm to produce speciality doors and windows which could not be produced with the existing facilities. Mr. Barnaby estimated that a new building and modern production machinery could greatly increase his output capacity.

Schooner Cove had built a local reputation as a dependable supplier of good quality, reasonably priced products. Consequently, the company had been hard-pressed over the past few years to keep up with the demand for its products and recently had turned away several new orders.

The first thing Mr. Barnaby did was contact the Department of Regional Economic Expansion (DREE). Initial discussions indicated that Schooner Cove Ltd. should be eligible for an industrial incentives grant. DREE asked Mr. Barnaby to prepare a detailed written description of the impact he felt his proposed expansion would have, both on his own operation and on the market in which he operated. In addition to estimates of the total costs involved, the potential number of new jobs which would be created, the source of the new materials and equipment and the expected profitability of such an expansion, DREE requested data on the present and potential size of Schooner Cove's market, the number and size of its competitors and the share Schooner Cove had of its market.

Mr. Barnaby compiled estimates of the capital costs, potential job creation, the sources he proposed to use for the purchase of materials and equipment and expected profitability without much difficulty since these were largely based on internal records and his personal knowledge of the industry. However, market information was not so readily available. Mr. Barnaby knew who his major competitors were, had a good idea of their selling prices and some notion of their sales volumes, but really didn't know how big the market for his products was or what share he had of it.

He did know that housing construction in the Halifax area had been fluctuating in the last few years, but was on the increase again. He had been providing Statistics Canada with information on a regular basis and he decided to contact the local Statistics Canada office in Halifax to see whether in return they could provide him with numbers showing housing construction activity for the area. He was referred to the User Advisory Services Division in the Regional Office and they provided him with a table of data from a Statistics Canada publication entitled *Housing Starts and Completions:*

Housing Starts by Type of Dwelling

Metropolitan Halifax

Year	Single	Double	Row	Apartment	Total
1968	368	172	40	864	1,444
1969	432	304	—	2,582	3,318
1970	401	162	10	1,770	2,343
1971	551	138	276	1,586	2,551
1972	1,087	100	323	1,030	2,540
1973	1,219	152	316	2,494	4,181
1974	1,264	100	202	1,529	3,095
1975	1,163	294	79	1,172	2,708

Source: Housing Starts and Completions, Cat. No. 64-002

Although the company's largest market was Metro Halifax, it also had well established markets in the surrounding areas, particularly the rest of Halifax County and the municipality of East Hants. Housing starts data were not available for all of the surrounding areas but, at the suggestion of User Advisory Services, Mr. Barnaby looked at data on the number of building permits issued in these areas in the Statistics Canada publication *Building Permits:*

Building Permits by Type of Dwelling: Metro Halifax, Halifax County, and East Hants Municipality Combined

Year	Singles	Doubles	Rows	Apartments	Other	Total
1968	790	263	—	1,305	52	2,410
1969	1,104	473	—	2,917	27	4,521
1970	1,058	256	—	1,806	28	3,148
1971	1,389	227	—	1,788	30	3,434
1972	1,656	256	425	2,015	66	4,418
1973	1,880	198	128	2,161	55	4,422
1974	1,835	187	114	1,304	58	3,498
1975	1,762	327	—	1,553	51	3,693

Source: Building Permits, Cat. No. 64-001

Now, with a knowledge of the number of building permits issued by type of dwelling, Mr. Barnaby could estimate the total market for his products. He could multiply the number of doors and windows he knew each type of building would contain, on average, by the number of building permits issued for that type of dwelling in a particular year and thereby obtain a measure of total market size. From his company records he extracted annual sales of door and window units and constructed the following table:

Number of Door & Window Units Sold by Year, Schooner Cove Ltd. and Estimated Total Units in Metro Halifax, Halifax County and East Hants Municipality Combined 1968 — 1975

Year	Number of Window & Door Units Sold by Schooner Cove Ltd.	% increase from 1968	Est. Total No. of Units Used in Metro Halifax, Halifax County & East Hants Combined	% increase from 1968
1968	7,148	—	46,569	—
1969	7,443	4.1	80,024	71.8
1970	7,335	2.6	68,964	48.1
1971	7,330	2.5	69,154	48.5
1972	7,468	4.5	89,955	93.2
1973	7,536	5.4	90,615	94.6
1974	7,418	3.8	78,251	68.0
1975	7,502	5.0	80,080	72.0

Source: Calculated from Building Permits, Cat. No. 64-001 and company records

By 1969 Schooner Cove Ltd. was operating at capacity and had continued to do so. However, the estimated total market for the firm's products had fluctuated considerably over that period but was once again increasing. Mr. Barnaby could see that his market share had decreased when construction activity was at a high level.

Mr. Barnaby used the Statistics Canada information in the report he prepared for DREE. He also decided to subscribe to the two inexpensive monthly publications, *Building Permits* and *Housing Starts and Completions* so that he could carry out this sort of analysis regularly. In addition, these publications would provide him with similar information for other parts of the province, if he decided to market his products in other areas.

Case Study 4.

Case Study 4. Checking Costs

Starchuk Steel Limited, a structural steel fabrication company near Edmonton, undertook a variety of contracts but most of the work was in the fabrication of heavy steel components for bridges, buildings, large tanks and similar structures.

Sales had increased steadily over the years and there was enough work on the order book to keep the operation busy for several months. Despite this, the owner, Ed Starchuk was worried because he had recently lost three important contracts to competitors. Over the years he had periodically checked his main costs, but the company's growth and profitability record had been quite good and most of his efforts to keep down costs had been by rule of thumb. He decided that the time had come for a thorough check to see if his costs were out of line.

His accountant extracted some of the figures he needed from the company's accounts and suggested he consult the Edmonton Regional Office of Statistics Canada for information on the industry as a whole — its labour, material and other costs. Mr. Starchuk visited the office taking with him the accountant's report.

The first publication he looked at was *Fabricated Structural Metal Industry*. From the data in the publication, he constructed the following table:

1974	Alberta	Canada
Number of Establishments	17	163
Production and Related Workers — number	1,174	14,813
— man hours paid	2,429,000	31,106,000
— wages ($)	13,616,000	168,756,000
Cost of fuel and electricity ($)	295,000	5,782,000
Cost of Materials and Supplies ($)	27,993,000	372,594,000
Value of Production ($)	83,358,000	839,785,000
Value Added ($)	55,070,000	461,409,000

Source: Fabricated Structural Metal Industry, Cat. No. 41-207

His own account for the past year was:

Starchuk Steel Limited (1975)	
Production and Related Workers — number	45
— man hours paid	97,218
— wages ($)	512,110
Cost of fuel and electricity ($)	20,461
Cost of materials and supplies ($)	1,675,480
Value of production ($)	3,103,740

Ed Starchuk calculated that wages of production and related workers as a percentage of the value of production were 20.1% for the industry in Canada and 16.3% for Alberta alone. He was satisfied because the comparable figure for his own company was 16.5%, which was in line with the industry in Alberta and substantially lower than the industry in Canada, but he was more interested in Table 3 of the publication which gave similar information by size of company. Mr.

Starchuk thought that comparison with companies of a similar size was more valid than with the industry as a whole, because large companies could take advantage of bulk purchases and other economies of scale.

Table 3 gave the following information:

Table 3. Principal statistics classified by total employed, 1974

		Manufacturing activity						
		Production and related workers						
Size group	Establishments	Number	Man-hours paid	Wages	Cost of fuel and electricity	Cost of materials and supplies	Value of production	Value added
	No.		'000			$ '000		
0—4	12	28	58	241	*	557	940	383
5—9	9	47	101	450	12	1,478	3,136	1,646
10—19	30	333	715	3,245	138	11,596	20,014	8,280
20—49	38	946	2,012	9,774	389	35,881	64,462	28,192
50—99	20	1,152	2,424	11,449	432	35,937	68,517	32,148
100—199	26	2,830	5,898	30,278	1,031	68,068	152,877	83,778
200—499	18	4,044	8,541	45,153	1,845	113,736	250,955	135,374
500—999	9	5,433	11,358	68,166	1,935	105,341	278,884	171,607
1,000—or over	1							
Total	163	14,813	31,106	168,756	5,782	372,594	839,785	461,409

*For establishments with less than 5 employees, the cost of fuel and electricity is included in the cost of materials and supplies
Source: Fabricated Structural Metal Industry, Cat. No. 41-207

Mr. Starchuk's firm was in the 20 to 49 employee class and he noted that in Canada there were 37 other plants in the same size range.

He calculated the ratio of production wages to value of production for his size group and it came to 15.2%. The satisfaction he had felt earlier disappeared. His own production wage costs, at 16.5% of value of production, were higher than other companies of the same size. Although information by size group for Alberta alone was not available, the earlier table had indicated that Alberta might be lower than the national average. Mr. Starchuk realised that he needed a lot more information before he could draw any conclusions but, even so, the figures were interesting and he would have to find out why his own wage costs were higher than the average of his own and those of his competitors.

Mr. Starchuk then looked at the following information on steel inputs from Table 6.

1974
Large establishments reporting detail
Materials used: Steel, hot or cold rolled

Description		Quantity	Cost
			$ '000
Bars			
Cold finished			
Carbon	ton	8,198	2,155
Alloy	ton	146	72
Stainless	ton	1,900	1,900
Other	ton	57,183	15,045
Hot rolled			
Carbon	ton	88,103	25,411
Alloy	ton	561	334
Other	ton	33,783	6,418
Plates (3/16 in. and thicker)	ton	206,458	59,227
Sheets and strips			
Carbon, hot rolled	ton	45,145	8,687
Carbon, cold rolled	ton	1,808	445
Galvanized (including prepainted)	ton	52,532	17,799
Other plated sheets	ton	718	267
Structural shapes, unfabricated (channels, angles, etc.)	ton	463,407	126,872
Wire	ton	11,570	2,928
Scrap iron and steel of all kinds	ton	5,789	733
Pipe and tubes, iron and steel		.....	9,242
Other, iron and steel		.....	20,322
Ferro-alloys	ton	103	24

Source: Fabricated structural Metal Industry, Cat. No. 41-207

This and details on other materials purchased provided him with the basis for a number of comparisons, but his immediate interest was the cost of steel plate, one of his main material costs. He noted that 206,458 tons had been purchased in 1974 at a cost of $59,227,000. — approximately $287. per ton. He remembered clearly that he had paid more than that in 1974. Inflation had pushed the price higher since then, but he was probably in the same volume group for purchases. He would have to study the possibility of buying steel plate in larger quantities.

Mr. Starchuk noted other figures in *Fabricated Structural Metal Industries*, including details of energy costs by type of fuel, shipments and inventories, but he needed further information from his own records before he could make comparisons. Also, the Regional Advisor at Statistics Canada told him about a monthly publication *Inventories, Shipments and Orders in Manufacturing Industry* which gave more up-to-date information on the value of shipments, new and unfilled orders and inventories for the fabricated structural metal industry. He decided to look at this later.

He then asked the Regional Advisor if Statistics Canada published information on industry profits and was shown a copy of *Corporation Financial Statistics*. This included a wide range of financial information — balance sheet items, income and related earnings, profit and loss, etc. Mr. Starchuk calculated that gross profit as a percentage of sales was 12.9% for the structural steel industry in Canada. Data were also given for a number of other metal fabricating industries, but no regional data were provided. He noted that the calculation was for gross profit and realised that he would have to get the comparable figures for his company. However, he knew his profits were not much higher than that and, given the volume of work the company undertook, it reinforced his suspicion that his costs were too high.

The Regional Advisor pointed out a number of other calculations which could be made from Tables 2A and 2B in this publication, including the rate of return on capital employed or on equity. This could be done using net profit before or after tax. These, as a percentage of total liabilities and equity less total current liabilities would give rate of return on capital employed; and, as a percentage of total equity plus liabilities due to shareholders or affiliates would give rate of return on equity.

Looking again at Table 2A, Mr. Starchuk noted that accounts receivable were $108 million for the structural steel industry. This was 21.4% of product sales; much lower than the ratio for his own company. For some time he had been aware that his accounts receivable were higher than they should be, and his accountant had warned him that it was a potential problem. He had several long established customers who were the major cause of the problem, but some of them were friends and he was reluctant to pressure them. Now that he knew he was giving better-than-average credit terms, he could inform his customers of the fact and use Statistics Canada data to support a request for prompter payment.

Mr. Starchuk had now identified three possible problem areas — labour costs, steel plate costs and accounts receivable. He had acquired a lot of information which needed further study in relation to details from his own records, and he had found out that Statistics Canada could provide him with a large volume and variety of information.

He decided to subscribe to some of these publications so he could receive them on a regular basis and he also knew he could telephone User Advisory Services if he had any further questions.

Case Study 5.

Case Study 5 Escalating Industrial Contracts

Richard Tremblay was the general manager of North Shore Pumps Ltd., a Montreal company engaged in the production of custom-made pumps for installation in large construction projects. North Shore Pumps employed 91 persons and had annual sales in 1975 of about $5 million.

In recent times, substantial price fluctuations had made accurate cost estimating a problem for the company. Mr. Tremblay was painfully aware that the company had lost heavily on several contracts and now he faced the problem again as he tried to estimate costs for a long term contract to supply the pumps for a large public utility project.

Mr. Tremblay had heard about the use of price escalation clauses in industrial contracts but wanted to find out more about them. He knew they involved adjusting prices in line with changes in official statistics so he decided to talk to the Regional Advisor at the local Statistics Canada office.

The Regional Advisor explained that an escalation clause made it unnecessary to estimate the contract price in advance. Instead, the company could bid on the basis of current costs and then set out in the contract a formula for increasing the price in line with increases in costs generally experienced by the industry as measured by published statistics. For example, the clause may state that the bid price will be adjusted by a specially compiled index composed of two or three specified measures of change in material and labour costs published by Statistics Canada. This type of escalation clause will also state clearly the weight, or proportion, each published series will have in the special index and how frequently the price is to be adjusted.

Another type of escalation clause may simply state that a given percentage of the bid price will be escalated in line with a particular published index. Price escalation clauses do not have to follow any hard and fast rules; they may contain any provisions to which the two parties agree.

The Regional Advisor explained that many companies using contract price escalation believed that some of the element of risk is removed because it is no longer necessary to predict price behaviour over an extended period of time. Also, some purchasers who are party to such contracts feel they can better evaluate competing bids because fixed bids may be based on different forecasts of future price change.

The Regional Advisor took care to discuss several points North Shore Pumps should consider before deciding to use escalation clauses:

a) Usually escalation clauses take account of only the most important material and labour inputs.

b) Historical changes in the indexes chosen should roughly parallel the firm's history of price changes for inputs.

c) Where the most closely-related index does not correspond exactly to the item to be escalated, more general indexes should be investigated to see if their historical pattern of change more closely follows the company's experience.

d) Where a special index is compiled, the weights to be given to each component to be escalated (e.g., materials, labour) must be determined.

e) The contract should be written so that revisions to the indexes can be accommodated without invalidating the escalation clause. It is better to use percentage changes and not index point changes,[1] since percentage changes are not affected by a change in the base year.

f) The Prices Division of Statistics Canada should be asked about the indexes chosen for use in an escalation clause to ensure it will be possible to maintain comparable indexes over the life of the contract.

g) It is necessary to fully understand the characteristics, methodology and limitations of the data before incorporating them in an escalation clause.

The Regional Advisor then outlined the types of data from Statistics Canada that Mr. Tremblay could use in an escalation clause. He explained that material prices could be adjusted by one of a number of different indexes — industrial selling price indexes (ISPI), wholesale price indexes or consumer price indexes. To adjust labour costs, average hourly earnings by industry or indexes of average weekly earnings in various industries and areas are available.

[1] An explanation of the difference between an index point change and a percentage change is given on page 37

Mr. Tremblay thought that an ISPI which reflected the change in price of high alloy steel, and average hourly earnings in his industry would be the most appropriate for the upcoming contract. He returned to his office with two publications, *Industrial Price Indexes* and *Employment, Earnings and Hours*, which contained the information he needed.

He looked at three ISPI's — the individual indexes for steel castings and malleable castings aggregated one for iron and steel mills would be better. Mr. Tremblay then studied the average hourly earnings figures in *Employment, Earnings and Hours* and decided that the figures for the miscellaneous metals industries would be the most appropriate since they showed a reasonably similar pattern of change to his own labour costs.

Mr. Tremblay was confident that his customers would be willing to accept contracts based

Quarter to quarter percentage change

Year	Quarter	North Shore's High Alloy Steel Costs	ISPI Steel Castings	ISPI Malleable Castings Incl. Fittings	ISPI Iron & Steel Mills
1973	i	1.7	—	0.4	1.9
	ii	1.7	2.4	2.2	2.0
	iii	3.5	1.2	1.9	2.6
	iv	1.0	3.9	3.8	1.6
1974	i	5.0	8.6	1.7	7.8
	ii	8.5	15.0	11.5	9.8
	iii	6.8	7.7	17.8	5.1
	iv	2.5	4.5	5.1	3.6
1975	i	3.0	4.1	0.6	6.0
	ii	2.1	2.7	-0.1	2.4
	iii	2.6	2.1	2.0	1.8
	iv	4.7	6.2	4.3	5.6

Source: Calculated from Industry Price Indexes, Cat. No. 62-011 and company records.

including fittings and the more general index for iron and steel mills. He then got his bookkeeper to look up the purchase orders for steel over the previous three years and draw up a table so he could compare the changes in his own costs with those of the indexes. It was simpler to calculate quarterly changes in the average price North Shore paid for steel but ISPI's are published monthly so the bookkeeper calculated the percentage change in the average of the three indexes for one quarter compared with the average for the preceeding quarter.

It appeared that neither of the more specific indexes were appropriate and that the more on actual price changes published by a disinterested third party, rather than on estimates. He still would have to do some more detailed long term historical comparisons between his costs and the Statistics Canada data, but he had certainly gained a better understanding of escalation clauses. He would be back in touch with the Regional Advisor to find out more about the so-called "COLA" clauses for cost of living adjustments to his employees' wages, as his own union contract was coming up for negotiation in the near future.

And that's not all...

And that's not all . . .

The case studies give an idea of the type of information available from Statistics Canada. But only an idea. It is impossible to describe in this booklet all the publications and unpublished data which are available but it is important that readers appreciate the scope and depth of this information.

For example, the *Census of Manufactures*, which is mentioned in two of the case studies, is published annually in over 140 reports and there are over 60 monthly and quarterly publications on manufacturing industry. The *Census of Population* provides information on the age, sex, marital status, education, religion, language, occupation, housing and migration of the population of Canada, as well as on ethnic origin and income. The *foreign trade* publications give very detailed information on the quantity and value of commodities imported from, and exported to, all the countries in the world. The export publications even give details of commodities exported to specific parts of the U.S.A.

One important area of information not mentioned in the case studies is the data published by Statistics Canada on the Canadian economy as a whole. Each quarter Statistics Canada compiles and publishes the *National Accounts* which show such things as government revenue and expenditure, gross national expenditure, source and disposition of personal income, national income and gross national product. In addition, Statistics Canada publishes figures on a number of *economic indicators* — employment, unemployment, retail and wholesale trade, consumer credit, earnings, prices, foreign trade, industrial production and job vacancies.

Although Statistics Canada does not normally publish *forecasts* there are two notable exceptions to this rule. At the beginning of each year, it publishes details of the proposed capital investment of industries and governments, as reported by the establishments concerned. Also Statistics Canada publishes *population projections* for Canada and the provinces. Using different sets of assumptions, these provide separate estimates of the population by age and sex for each province and territory to the year 2001.

Most of the information requested by the inexperienced user of statistics is probably in the over 1000 publications produced by Statistics Canada each year. However, even if it is not published, it may be part of the great quantity of *unpublished material* which is available on request. Alternatively, it is often possible for Statistics Canada to undertake *special tabulations* which are more closely tailored to a user's needs. External trade and the census of population are both areas where a lot of unpublished information is available or special tabulations can be undertaken for a modest fee.

Finding and Using Statistics

Finding and Using Statistics

Where to get statistics and who to ask for help

Finding one's way through the more than 1000 Statistics Canada publications may, at first, seem a formidable task but in fact is quite straightforward.

Firstly, there is a free Catalogue of Publications which lists and describes all Statistics Canada publications and has a subject index. For people who want to be completely up to date there is *Infomat*, a weekly publication which is also available free and which lists the publications issued the previous week and features some of the highlights.

But the golden rule is: If in doubt — ask!

Statistics Canada's User Advisory Services has offices in nine cities across Canada from St. John's to Vancouver. Each has a library of all Statistics Canada publications and a knowledgeable inquiries staff who answer 100,000 inquiries a year and provide information on the sources of information and the meaning and uses of data. In each office there are one or more Regional Advisors. It is their job to help people with complex data problems and to promote the use of statistics through visits, talks and meetings with associations, business groups, etc.

The addresses of these offices are given on page 44 and, on page 42, there is a list of the more than 50 libraries across Canada which receive all Statistics Canada publications. Many other public libraries carry a selection of the major publications.

The purchase of individual copies of Statistics Canada publications can be arranged through the regional offices or by writing to:
Publications Distribution,
Statistics Canada,
Room 1405, Statistics Canada Building,
Tunney's Pasture,
Ottawa, Ontario. K1A 0T6

Alternatively, publications can be purchased through bookstores which act as agents for the Government of Canada.

Understanding the Jargon

Every occupation has its own language or jargon, and statisticians are no exception. However, there is no need for this to deter people from using the statistics. The following is a glossary of some of the unfamiliar words most frequently used in Statistics Canada publications. Users who require an explanation of other terms should consult the nearest User Advisory Services office.

Means and Medians

These are both ways of expressing a series of numbers by a single number. The *mean* most frequently referred to in Statistics Canada's publications is the arithmetic mean. It is what most people call the "average" and is calculated by adding up the numbers in the series and dividing the total by how ever many numbers there are. For example, if five children are ages 3, 4, 5, 8 and 10, their mean age is:

$$\frac{3+4+5+8+10}{5} = 6$$

The *median* is the value of the middle number of a series ranked in order of size. For example, given the ages of five children as 5, 4, 8, 3 and 10, to find the median age the series would first have to be rearranged in order of size, i.e., 3, 4, 5, 8, 10, and the value of the middle number, i.e., 5 would be the median age.

Time Series

Information collected or recorded at regular intervals through time — weekly, monthly or annually, — is called a "time series" or a "series". Statisticians speak of a series of numbers employed, a series of annual production, a series of monthly retail trade. A series may be made up of actual numbers (e.g., population, unemployed, job vacancies) or dollar values (shipments, inventories, purchases). It may also be in the form of an index.

Index Numbers and Indexes

Index numbers are a statistician's way of expressing the difference between two measurements by designating one number as the "base", giving it the value 100 and then expressing the second number as a percentage of the first. For example, if the population of a town increased from 20,000 in 1972 to 21,000 in 1975, the population in 1975 was 105% of the population in 1972. Therefore, on a 1972 base, the population index for the town was 105 in 1975.

An "Index", as the term is generally used when referring to statistics, is a series of index numbers expressing a series of numbers as percentages of a single number. For example, the numbers

50 75 90 110

expressed as an index would be

100 150 180 220

Indexes can be used to express comparisons between places, industries, etc., but the most common use is to express changes over a period of time, in which case the index is also a time series. One point in time is designated the base period — it may be a year, month, or any other period — and given the value 100. The index numbers for the measurement (price, quanity, value, etc.) at all other points in time indicate the percentage change from the base period.

If the price, quantity or value has increased by 15% since the base period the index is 115; if it has fallen 5% the index is 95. It is important to note that indexes reflect differences and not absolute levels. If the price index for one item is 110 and for another is 105 it means the price of the first item has increased twice as much as the price of the second. It does not mean that the first item is more expensive than the second.

Each index number in a series reflects the percentage change from the base period. It is important not to confuse an index point change and a percentage change between two numbers in a series. For example, if the price index for butter was 130 one year and 143 the next year, the index point change would be:

$$143 - 130 = 13$$

but the percentage change would be

$$\frac{143 - 130}{130} \times 100 = 10\%$$

Current and Constant Dollars

When statistical tables give the value of, for example, sales, inventories or investment in *current* dollars, it simply means the values are expressed in terms of their price or cost at the time the survey or measurement was taken. However, the value (or purchasing power) of the dollar changes over time with inflation or deflation. For example, statistics may show that wages have increased substantially over a given period; but if prices have also gone up, the purchasing power of each wage dollar has decreased. To find out how much "real" wages, as opposed to cash wages, have increased, the wages have to be expressed in dollars which have a constant value over time, i.e., in *constant* dollars. Constant dollars can be used for any value which is expressed in dollars, or for indexes which reflect dollar values. When constant dollars are used in a statistical table, the value of the dollar in one particular year is selected and the year is always clearly stated. At present, most constant dollar series use 1971 dollars as that is the base year for most major national and international indexes.

Seasonal Adjustment

In Canada, the changing climate, or consumer habits related to it, affect nearly all business activity. Construction comes to a slowdown in winter; tourism increases in summer; the Christmas season brings out far more shoppers than any other. The demand for most goods and services changes along with the seasons: consumers want boots in winter, swim suits in summer, and so on. This sometimes makes it difficult to determine the underlying trend from an examination of a series of month by month figures.

For this reason, many series are adjusted to remove the effect of seasonal variations. To do this, seasonal factors for each month are calculated. For example; if, in a typical year, sales in jewelry stores in March are 84 percent of average monthly sales, the seasonal factor for March for jewelry store sales would be 84. (Average monthly sales are the total annual sales divided by twelve). If sales in December are 140% of the average month's sales, the December seasonal factor would be 140.

Having determined the seasonal factors, the seasonally adjusted series is calculated by dividing the value, quantity or index for that month, by the monthly factor, and multiplying by 100 because the factor is a percentage.

Here is an example of a series on department stores sales in Canada showing the monthly dollar value of sales, the seasonal factors and the seasonally adjusted value of sales. Note that the underlying trend is more clearly identified in the adjusted figures.

Department Stores Sales, Canada 1975

Month	Unadjusted or Actual Sales (1)	Monthly Factor (2)	Seasonally — Adjusted Sales $\frac{(1)}{(2)} \times 100$
1975	Millions of dollars		Millions of dollars
January	332 8	75.38	441.5
February	305 9	68.73	445.1
March	382 6	84.52	452.7
April	431 0	93.51	460.9
May	496 2	104.40	475.3
June	436 4	95.18	458.5
July	446 6	90.28	494.7
August	459.9	91.12	504.7
September	501 0	100.95	496.3
October	524 2	103.01	508.9
November	596 3	122.65	486.2
December	873 0	167.27	521.9

Sales are not the only figures which are seasonally adjusted. Employment, inventories, consumer credit, consumer prices, industrial production and a number of other series are published both seasonally adjusted and unadjusted.

Sampling

Sometimes information cannot be collected from every person, company, etc., in the group being studied because it would take too long or be too costly. Instead, a portion of the group or industry — a sample — is scientifically selected so that the results which are obtained are representative of the group as a whole. In general, the accuracy of the sample varies with its size, and this is determined on the basis of what constitutes an acceptable "sampling error" for the purpose at hand. For instance, a sample used to measure employment in a province may not produce accurate statistics for an individual city in that province. That would require a separate, specifically designed sample.

Census

A census is a survey in which information is collected from every person, company or institution in the group; in other words, it is a 100% sample. The most widely known census is the Census of Population which is taken every five years and which involves every household in Canada. There are also censuses of industry — for example the Census of Manufactures, Census of Construction and Census of Merchandising and Services.

Standard Industrial Classification (SIC)

The SIC is simply a method of classifying the activities that go on in places where people work. It is based on the type of products made or the service given at each place. It covers everything from an Abattoir to a Zoological Garden. Every kind of economic activity in Canada is classified to one of 12 divisions, then to a major group within the division, then to a group which is given a three digit number and sometimes to a subgroup which has a four digit number. For example, Wood Industries are Major Group 8 of Division 5 — Manufacturing. They contain the following separate industries.

Major Group 8 — Wood Industries	
251	Sawmills, Planning Mills and Shingle Mills
2511	Shingle Mills
2513	Sawmills and Planning Mills (except Shingle Mills)
252	Veneer and Plywood Mills
254	Sash, Door and Other Millwork Plants
2541	Sash, Door and Other Millwork Plants, not elsewhere specified
2542	Hardwood Flooring Plants
2543	Manufacturers of Pre-fabricated Buildings (Wood-Frame Construction)
256	Wooden Box Factories
259	Miscellaneous Wood Industries
2591	Wooden Preservation Industry
2592	Wood Handles and Turning Industry
2593	Manufacturers of Particle Board
2599	Miscellaneous Wood Industries, not elsewhere specified

The purpose of the SIC is to classify firms and organizations so that statistics about them can be compiled in a consistent way. All government statistics on industry, and many produced outside government, use the SIC. The SIC manual is available from Statistics Canada and it contains an alphabetic list of industries and activities. Every establishment or other organizational entity is classified according to its principal activity, although, of course, many are also engaged in other activities. Reference to the manual is sufficient for most firms to identify to which industry they are classified and therefore which industry report they should consult to find out about other companies like themselves. Also, firms which sell to companies or organizations can use the SIC manual to classify their customers to various industries. They can then examine the various submarkets and the proportion of sales going to each. Facts about those submarkets can be obtained from published statistics and market size and share determined. It is this type of basic market research which can be so valuable to a company.

The SIC is simply a classification of industries or economic activities. There are other classification systems used by Statistics Canada to classify commodities, imports, exports, geographical areas and occupations. Statistics Canada publishes manuals on all these classifications.

Confidentiality

In some tables published by Statistics Canada an asterisk replaces a number and a footnote indicates that the figure is confidential. Statistics Canada is forbidden by law to publish any information which can be related to one person or one company. For industrial statistics this generally comes down to the "rule of three", that is that no figure which is made up of data on less than three companies can be published as one of the two would automatically know the facts about the other. While there are usually more than three companies in an industry in Canada there are often only two in a province or only two which make, or export, a particular product. Even when there are more than three companies it is sometimes necessary to blank out the figures because one firm dominates to such an extent that to publish the industry's figures would risk disclosing the company's information.

Statistics Canada also has to ensure that it does not divulge confidential information by residual disclosure. If, for example, publishing information on the widget industry in Prince Edward Island is prohibited because there is only

one widget maker in the province, it is obviously impossible for Statistics Canada to publish statistics on the widget industry in each of the other provinces and territories and in Canada as a whole. If it did, it would be a simple matter to work out the figures for P.E.I. and, therefore, the figures for the only company located there. In these cases Statistics Canada has to suppress the figures for at least one other province or publish only national or regional figures.

There are many other instances in which residual disclosure can occur and Statistics Canada goes to great lengths to protect the confidentiality of the information which is entrusted to it. That is the reason why sometimes it cannot provide the figures users want.

The do's and don'ts of using statistics

We said earlier that statistics are not difficult to use. This is true, but there are a number of pitfalls for the unwary and, while many of them can be avoided by common sense, some might not be readily apparent to the inexperienced user.

Firstly, users should always read the introduction, footnotes and explanatory notes and definitions published with the statistics to be sure the figures do measure what they think they measure. These notes give a clear explanation of the definitions and concepts used. If you need further information contact Statistics Canada (see page 44). This is very important as statistics which are widely quoted in the press and on radio and television can be very misleading or inconclusive for business purposes. For example, a city once claimed to be "the healthiest in the nation" because it had the lowest death rate. What was not mentioned was the fact that the city had no major hospital and the most serious cases were hospitalized in neighbouring cities. Deaths were recorded where they actually occured.

Always be wary of simple averages. Remember that they include the two extremes. For example, if three photographers have an average income of $14,000 a year, their individual income could be $5,000, $8,000 and $29,000, in which case the majority of photographers make far less than the average.

Make sure you compare like with like. In the case study on checking costs, the manufacturer had to calculate comparable gross profit figures for his own company before he could make an accurate comparison with the published figures. Check the definitions to be sure what the figures include and exclude.

Do not confuse commodity data with industry data. For example, the shipments of office furniture in the second case study include shipments of office furniture from all companies — whether or not they are classified to the office furniture industry. On the other hand, the value of shipments from, for instance, meat processors is not only made up of meat products, it can include chemicals, oils, soaps and any other product the firm may be producing. This distinction is very important when using statistics from two or more sources, for example, import or export statistics with shipments data — make sure you have shipments of commodities and check the classification definitions to be sure they are comparable.

A word of caution about forecasting. Everybody forecasts whether a manufacturer, retailer or head of a family. Forecasting is necessary as many plans for the future require some action in the present. There are many methods of forecasting but they all involve using information about the past and present. If you study a time series and see a trend developing you may be inclined to forecast something in the future, based on the assumption that what has happened in the past will continue to happen. Remember that any such projection of past experience into an uncertain future involves a risk and should not be undertaken without consideration of other information on possible future developments or factors which could cause a change. It is also wise to recognise that some statistical studies require the services of specialists — consultants trained in market research, forecasting, etc. Nobody should be frightened of using statistics but everyone should realise when they are out of their depth and it is time to bring in the experts.

A final word of warning. Statistics are rarely 100% right. At best they are usually approximations and are a little out of date. While Statistics Canada takes great pains to provide the best possible information there are a number of factors, for example sampling error, which can influence the accuracy of particular statistics. Of course the accuracy of nearly all the data published by Statistics Canada is dependent on the accuracy of the information it receives in answer to its questionnaires. When using statistics, allowances should be made for accuracy and users should avoid making too precise judgements on the basis of statistics alone.

This echoes what we said earlier — statistics are only one tool available to business people — other sources of information, including statistical information, published by government departments, industry associations, chambers of commerce and the like, should be used as well as the figures published by Statistics Canada. Nevertheless, statistics can be very useful. Canadian companies of all sizes have made an investment in Canada's official statistics, both through taxes and through the time taken to complete statistical questionnaires. It is therefore only common sense to get some return on that investment.

Libraries Receiving all Statistics Canada Publications

Newfoundland Public Library,
Allandale Road,
St. John's, Nfld.

Library,
Memorial University,
St. John's, Nfld.

Halifax City Regional Library,
5381 Spring Garden Road,
Halifax, N.S.

Dalhousie University Library,
Studley Campus,
Halifax, N.S.

Library,
Acadia University,
Wolfville, N.S.

University of New Brunswick,
Harriet Irving Library,
Fredericton, N.B.

Bibliothèque,
Université de Moncton,
Moncton, N.B.

Ralph Pickard Bell Library,
Mount Allison University,
Sackville, N.B.

Saint John Regional Library,
20 Hazen Ave.,
Saint John, N.B.

Bibliothèque municipale,
Rue Sherbrooke est,
Montréal, Qué.

McGill University Library,
3459 McTavish St.,
Montreal, Que.

Centrale des bibliothèques,
Ministère de l'Éducation du Québec,
1685 est, rue Fleury,
Montréal, Qué.

Serials Library,
Sir George Williams University,
1435 Drummond St.,
Montreal, Que.

Université de Montréal,
Bibliothèque Sciences Humaines
et Sociales,
Montréal, Qué.

Bibliothèque de l'Université Laval,
Cité Universitaire,
Ste-Foy,
Québec, Qué.

Université de Sherbrooke,
Bibliothèque générale,
Cité Universitaire,
Sherbrooke, Qué.

Brampton Public Library,
Chinguacousy Branch Library
and Art Gallery,
150 Central Park Drive,
Bramalea, Ont.

Mississauga Public Library,
110 Dundas St.,
Cooksville, Ont.

Documents Services,
York University Libraries,
4700 Keele St.,
Downsview, Ont.

Etobicoke Public Library,
1806 Islington Ave.,
Etobicoke, Ont.

Library,
Documentation Centre,
University of Guelph,
Guelph, Ont.

Hamilton Public Library,
Hamilton, Ont.

Documents Dept.,
Mills Memorial Library,
McMaster University,
Hamilton, Ont

Douglas Library,
Queen's University,
Kingston, Ont

Library,
University of Western Ontario,
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